Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1-64.   (Canceled)

65.   (Currently amended)   A computer-implemented process for producing a representation of a reference spectrum for a hypothetical solution having a first pH condition, for use in determining the composition of a test sample, the process comprising:

producing a position value for at least one peak of the reference spectrum in response to a measured pH condition of the test sample, and a property of at least one peak in a base reference spectrum for the hypothetical solution, the base reference spectrum being associated with a pH condition of the hypothetical solution that is different from said measured pH condition; and

storing said reference spectrum including said position value in memory for use in a process for determining the composition of the test sample.

66.   (Currently amended)   A computer-implemented process for producing a representation of a reference spectrum for a hypothetical solution having a first pH condition, for use in determining the composition of a test sample, the process comprising:

producing a position value for at least one peak of the reference spectrum in response to a measured pH condition of the test sample, and a property of at least one peak in a base reference spectrum for the hypothetical solution, the base reference spectrum being associated with a pH condition of the hypothetical solution that is different from said measured pH condition, wherein producing a position value comprises interpolating said position value from position values associated with base reference spectra associated with a pH condition nearest to said measured pH condition; and

storing said reference spectrum including said position value in memory for use in a process for determining the composition of the test sample.

67.   (Canceled)

68.   (Currently amended) A computer-implemented process for producing a representation of a reference spectrum for a hypothetical solution having a first pH condition, for use in determining the composition of a test sample, the process comprising:

producing a position value for at least one peak of the reference spectrum in response to a measured pH condition of the test sample, and a property of at least one peak in a base reference spectrum for the hypothetical solution, the base reference spectrum being associated with a pH condition of the hypothetical solution that is different from said measured pH condition, wherein producing a position value comprises producing said position value by addressing a lookup table of position values with a measured pH condition value representing said measured pH condition of said test sample; and

storing said reference spectrum including said position value in memory for use in a process for determining the composition of the test sample.

69.   (Canceled)

70.   (Currently amended) A computer-implemented process for producing a representation of a reference spectrum for a hypothetical solution having a first pH condition, for use in determining the composition of a test sample, the process comprising:

producing a position value for at least one peak of the reference spectrum in response to a measured pH condition of the test sample, and a property of at least one peak in a base reference spectrum for the hypothetical solution, the base reference spectrum being associated with a pH condition of the hypothetical solution that is different from said measured pH condition, the process further comprising accessing a pre-defined record specifying peaks in said reference spectrum and adjusting a position value in said pre-defined record, said position value in said pre-defined record being said position value of said at least one peak, wherein

adjusting comprises locating a pH condition value dependent function in said pre-defined record, producing said position value from said pH condition value dependent function and associating said position value with said pre-defined record; and

storing said reference spectrum including said position value in memory for use in a process for determining the composition of the test sample.

71.   (Previously presented)   The computer-implemented process of claim 70 wherein associating comprises storing said position value in said pre-defined record.

72-73   (Canceled)

74.   (Currently amended)   A computer-readable medium encoded with computer readable instructions for causing a processor circuit to produce a representation of a reference spectrum for a hypothetical solution having a first pH condition, for use in determining the composition of a test sample, the instructions comprising:

a set of codes for directing the processor circuit to produce a position value for at least one peak of the reference spectrum in response to a measured pH condition of the test sample, and a property of at least one peak in a base reference spectrum for the hypothetical solution; the base reference spectrum being associated with a pH condition of the hypothetical solution that is different from said measured pH condition, wherein the set of codes further comprise codes that direct the processor circuit to interpolate said position value from position values associated with base reference spectra associated with a pH condition nearest to said measured pH condition and a set of codes for directing the processor circuit to cause said reference spectrum including said position value to be stored in memory for use in a process for determining the composition of the test sample.

75.   (Canceled)

76.   (Currently amended)   An apparatus for producing a representation of a spectrum for a hypothetical solution having a first pH condition, for use in determining the composition of a test sample, the apparatus comprising:

a processor circuit programmed to produce a position value for at least one peak of the reference spectrum in response to a measured pH condition of the test sample, and a property of at least one peak in a base reference spectrum for the hypothetical solution, the base reference spectrum being associated with a pH condition of the hypothetical solution that is different from said measured pH condition, wherein the apparatus is further adapted to interpolate said position value from position values associated with base reference spectra associated with a pH condition nearest to said measured pH condition and store said reference spectrum including said position value in memory for use in a process for determining the composition of the test sample.

77.   (Currently amended)   An apparatus for producing a representation of a spectrum for a hypothetical solution having a first pH condition, for use in determining the composition of a test sample, the apparatus comprising:

means for receiving a measured pH condition value representing a pH condition of the test sample;

means for receiving a representation of a position value of at least one peak in a base reference spectrum for the hypothetical solution; and

means for producing a position value for at least one peak of a reference spectrum in response to said measured pH condition value of the test sample, and the position value of said at least one peak in said base reference spectrum, the base reference spectrum being associated with a pH condition value of the hypothetical solution that is different from said measured pH condition value, wherein said producing means is further adapted to interpolate said position value from position values associated with base reference spectra associated with a pH condition value nearest to said measured pH condition value and store said reference spectrum including said position value in memory for use in a process for determining the composition of the test sample..

78.   (Currently amended)   A computer-readable medium encoded with computer readable instructions for causing a processor circuit to produce a representation of a

reference spectrum for a reference hypothetical solution having a first pH condition, for use in

determining the composition of a test sample, the instructions comprising:

   a set of codes adapted to direct the processor circuit to:

     produce a position value for at least one peak of the reference spectrum in

response to a measured pH condition of the test sample, and a property of at least one peak in a

base reference spectrum for the hypothetical solution, the base reference spectrum being

associated with a pH condition of the hypothetical solution that is different from said measured

pH condition,

     <u>wherein said set of codes is further adapted to direct the processor circuit</u>

<u>to produce a position value by addressing a lookup table of position values with a measured pH</u>

<u>condition value representing said measured pH condition of said test sample</u>; and

     <u>wherein said set of codes is further adapted to direct the processor circuit</u>

<u>to store said reference spectrum including said position value in memory for use in a process for</u>

<u>determining the composition of the test sample.</u>.

   79. (Canceled)

   80. (Currently amended) A computer-readable medium encoded with

computer readable instructions for causing a processor circuit to produce a representation of a

reference spectrum for a hypothetical solution having a first pH condition, for use in determining

the composition of a test sample, the instructions comprising:

   a set of codes adapted to direct the processor circuit to:

     produce a position value for at least one peak of the reference spectrum in

response to a measured pH condition of the test sample, and a property of at least one peak in a

base reference spectrum for the hypothetical solution, the base reference spectrum being

associated with a pH condition of the hypothetical solution that is different from said measured

pH condition:

     access a pre-defined record specifying peaks in said reference spectrum;

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adjust a position value in said pre-defined record, said position value in said ~~pre-define~~ pre-defined record being said position value of said at least one peak, wherein the adjusting of the position value in said pre-defined record comprises:

locating a pH condition value dependent function in said pre-defined record;

producing said position value from said pH condition value dependent function; ~~and~~

associating said position value with said pre-defined record; and store said reference spectrum including said position value in memory for use in a process for determining the composition of the test sample.

81.   (Canceled)

82.   (Currently amended) An apparatus for producing a representation of a spectrum for a hypothetical solution having a first pH condition, for use in determining the composition of a test sample, the apparatus comprising:

a processor circuit programmed to produce:

a position value for at least one peak of a reference spectrum in response to a measured pH condition of the test sample, and a property of at least one peak in a base reference spectrum for the hypothetical solution, the base reference spectrum being associated with a pH condition of the hypothetical solution that is different from said measured pH condition, ~~and a~~ wherein said processor circuit is programmed to produce said position value by addressing a lookup table of position values with a measured pH condition value representing said measured pH condition of said test sample; and

store said reference spectrum including said position value in memory for use in a process for determining the composition of the test sample.

83.   (Currently amended) An apparatus for producing a representation of a spectrum for a hypothetical solution having a first pH condition, for use in determining the composition of a test sample, the apparatus comprising a processor circuit programmed to:

produce a position value for at least one peak of a reference spectrum in response

to a measured pH condition of the test sample, and a property of at least one peak in a base

reference spectrum for the hypothetical solution, the base reference spectrum being associated

with a pH condition of the hypothetical solution that is different from said measured pH

condition,

access a pre-defined record specifying peaks in said reference spectrum;

adjust a position value in said pre-defined record, said position value in said pre-

defined record being said position value of said at least one peak,

adjust said position value by locating a pH condition value dependent function in

said pre-defined record, ~~and~~

produce said position value from said pH condition value dependent function and

to associate said position value with said pre-defined record; and

store said reference spectrum including said position value in memory for use in a

process for determining the composition of the test sample.

84.   (Previously presented)   The computer-implemented process of claim

68 wherein said lookup table specifies peak positions for various pH conditions and wherein

addressing said lookup table comprises:

accessing a pre-defined record comprising a link to said lookup table;

retrieving said position value from said lookup table; and

associating said position value with said pre-defined record.

85.   (Previously presented)   The computer-implemented process of claim

84 wherein associating comprises storing said position value in said predefined record.